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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,197	02/22/2002	Sergio Spreafico	0019696-0144	4873

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EXAMINER	
ALCALA, JOSE H	

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/081,197	SPREAFICO ET AL.	
	Examiner	Art Unit	
	Jose H Alcala	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *16-29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This final action is in response to the amendment filed on 2/5/03.

Response to Arguments

2. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

3. Regarding applicant's argument about the double patenting rejection, it is pointed out that the pending claims have not been rejected for double patenting over Buczek. The examiner is merely pointing out that the double patenting rejection may be done in the case of finding allowable subject matter in the prosecution of the case, but since that is not the case, the double patenting rejection has not been sought.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, lines 16-18 recite that: "adapted to minimize strain concentration of said wires". That is a mere recitation that the "shape of the first end of at least one of the first and second high temperature superconducting components", is "adapted to" perform a function, and is not a positive limitation but only requires the

ability to so perform. It does not constitute a limitation in any patentable sense. See In re Hutchison, 69 USPQ 138. Furthermore, it can be interpreted as being merely an intended use limitation, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987). In either case, the limitation has not been given any patentable weight.

Regarding Claim 5, lines 3-4 recite that: "adapted to minimize strain concentration of said wires". That is a mere recitation that the "shape of the first end of at least one of the first and second high temperature superconducting components", is "adapted to" perform a function, and is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. See In re Hutchison, 69 USPQ 138. Furthermore, it can be interpreted as being merely an intended use limitation, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987). In either case, the limitation has not been given any patentable weight.

Double Patenting

6. Claims 1-15 may be rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5,7-8,10-11,13-

14 of Buzcek U.S. Patent No. 6,159,905. If there is any allowable subject matter further in the prosecution of the case, this will be taken into consideration.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-5,12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaetti et al. (US Patent No. 3,643,001) in view of Ueyama et al. (US Patent No. 6,414,244). As best understood by the examiner:

Regarding Claim 1, Schaetti teaches a superconducting cable, comprising: (a) a core member (Reference number 1); and (b) a first high temperature superconducting wire (Reference number 2) wrapped helically around the core member, where the first high temperature superconducting wire comprises (i) a first high temperature superconducting component (Reference number 6) having a first end and a second end; but fails to teach (ii) a layer of a first nonsuperconducting solder material, a portion of the solder layer attached to at least a portion of the first end of first high temperature superconducting component; and (iii) a second high temperature superconducting component having a first end and a second end, at least a portion of the first end of the second high temperature superconducting component attached to a portion of the solder layer, wherein the portion of the first high temperature superconducting

component attached to the solder material and the portion of the second high temperature superconducting component attached to the solder material form an overlap segment. The limitation that the shape of the first end of at least one of the first and second high temperature superconducting components is adapted to minimize strain concentration of said wires, has not being given patentable weight as stated supra.

Ueyama teaches (i) a first high temperature superconducting component (Reference number 11a) having a first end and a second end; (ii) a layer of a first nonsuperconducting solder material (Reference number 4), a portion of the solder layer attached to at least a portion of the first end of first high temperature superconducting component; and (iii) a second high temperature superconducting component (Reference number 11b) having a first end and a second end, at least a portion of the first end of the second high temperature superconducting component attached to a portion of the solder layer, wherein the portion of the first high temperature superconducting component attached to the solder material and the portion of the second high temperature superconducting component attached to the solder material form an overlap segment (See section where one is attached to the other in figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schaetti and Ueyama, in order to have two high temperature superconducting components joined by a solder material forming an overlap segment, thus reducing the harmful connection resistance between the components.

Regarding Claim 2, Schaetti as modified by Ueyama, teaches at least one protective layer (column 2, lines 30-31 of Schaetti) connected to the first ends of the first and second high temperature superconducting components. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to have the protective layer connected to the first ends of the first and second high temperature superconducting components, in order to protect and cover the junction area in order to stabilize the connection.

Regarding Claim 3, Schaetti as modified by Ueyama teaches that the overlap segment has a reduced connection resistance. Since the solder is not superconducting, it is inherent that the critical current of the overlap segment is less than the lesser critical current of the first and second high temperature superconducting components. The combination fails to explicitly teach that the critical current of the overlap segment is more than 50% of the lesser of critical currents of the first and second high temperature superconducting components, where critical current is determined using a 1 μV/cm criterion. The combination fails to explicitly teach that a section of the first superconducting wire has a length at least 100 times the length of the overlap segment and that the overlap segment has a critical current at least 80% of the lesser of critical currents of the first and second high temperature superconducting components. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the critical current at least 50 or at least 80% of the lesser of critical currents of the first and second high temperature superconducting components, since it is desired to approximate the critical current of the overlapping section to the critical current of the

superconducting components. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the section of the first superconducting wire having a length at least 100 times the length of the overlap segment, since it is desired to eliminate the effects of having a section with less critical current than the rest of the superconducting elements. In addition, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. See In re Aller, 105 USPQ 233.

Regarding Claim 4, Schaetti teaches a second high temperature superconducting wire wrapped helically around the core (Another one of the wires Reference number 2), but fails to teach that the first and second high temperature superconducting wires have opposite helicity. In addition Schaetti teaches that nonsuperconductive wires (Reference number 4) have opposite helicity (column 2,lines 38-41) to the superconducting wires. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first and second high temperature superconducting wires have opposite helicity, in order to increase the electrical field in the cable.

Regarding Claim 5, Schaetti teaches that the first high temperature superconducting wire is wrapped around the core with a constant pitch (See Figure). The limitation that the shape of the first ends of the first and second high temperature superconducting components are adapted to minimize strain concentrations in first high temperature superconducting wire, has not being given patentable weight as stated supra.

Regarding Claims 12-15, Schaetti as modified by Ueyama fails to explicitly teach that the critical current of the overlap segment is more than 50% of the lesser of critical currents of the first and second high temperature superconducting components, where critical current is determined using a 1 μV/cm criterion. The combination further fails to explicitly teach that the overlap segment has a critical current at least 85%, 90%, 95%, or 99% of the lesser of critical currents of the first and second high temperature superconducting components. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the critical current at least 50%,85%, 90%, 95%, or 99% of the lesser of critical currents of the first and second high temperature superconducting components, since it is desired to approximate the critical current of the overlapping section to the critical current of the superconducting components. In addition, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. See In re Aller, 105 USPQ 233.

9. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaetti et al. (US Patent No. 3,643,001) in view of Ueyama et al. (US Patent No. 6,414,244) and further in view of Fujikami et al. (US Patent No. 5,358,929). As best understood by the examiner:

Regarding claims 6 and 7, Schaetti as modified by Ueyama teaches all the elements of the invention as stated supra for claim 1, but fails to explicitly teach that the first ends of the first and second high temperature superconducting components are

substantially triangular. Fujikami teaches the first ends of the first and second high temperature superconducting components are substantially triangular (See figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first ends of the first and second high temperature superconducting components to be substantially triangular, in order to suppress reduction of critical current in the overlapping section.

Regarding claims 8 and 9, Schaetti as modified by Ueyama teaches all the elements of the invention as stated supra for claim 1, but fails to explicitly teach that the first ends of the first and second high temperature superconducting components are substantially diagonal. Fujikami teaches the first ends of the first and second high temperature superconducting components are substantially diagonal (See figure 17B). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first ends of the first and second high temperature superconducting components to be substantially diagonal, in order to suppress reduction of critical current in the overlapping section.

Regarding claims 10 and 11, Schaetti as modified by Ueyama teaches all the elements of the invention as stated supra for claim 1, but fails to explicitly teach that the first ends of the first and second high temperature superconducting components are substantially inverted triangular. Fujikami teaches the first ends of the first and second high temperature superconducting components are substantially inverted triangular (See figure 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first ends of the first and second high temperature

superconducting components to be substantially inverted triangular, in order to suppress reduction of critical current in the overlapping section.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references show some of the elements disclosed in the instant claimed invention: Lieurance (US Patent No. 5,583,319), Fevrier et al. (US Patent No. 5,308,831), Ranze (US Patent No. 5,104,030), Zimmerman et al. (US Patent No. 4,966,142), Ries (US Patent No. 4,409,425) and Tachikawa et al. (US Patent No. 3,857,173).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA
May 30, 2003

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